

Remarks

Claims 17–22 remain in this application. Claims 20–22 have been added.

In an Office action dated April 25, 2001, claims 17–19 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Durbin et al. (U.S. Pat. No. 6,003,773). The logic set forth in the Office action is that while the Durbin et al. patent describes a photosensor array having a conventional rectangular shape and the pending independent claim 17 describes a photosensor array having arcuate edges, since the system of Durbin et al. allegedly achieves distortion compensation, the Durbin et al. patent renders the claimed invention obvious. Applicant objects. Under Section 103(a), the issue is not whether achieving target results would be obvious. Rather, the issue is whether the invention set forth in pending claims would be obvious in view of the prior art. Applicant does not claim to have discovered the desirability of achieving distortion-free imaging. The claimed invention relates to the shape of the array (which is identified in the Office action as being distinguishable from the teachings of Durbin et al.) in combination with a lens system having a characteristic of introducing curvilinear distortion to the array having the distinguishable shape. A more thorough consideration of the patentability of claims 17–19 will be set forth below.

A. Added Claims 20–22

Claim 20 substantially tracks claim 17 as originally filed, but describes the array of photosensors as being two-dimensional and as having a curvilinear shape. The photosensors in the array are described as being varied dimensionally to define the curvilinear shape, which is aligned relative to curvilinear distortion optically introduced by the lens system so as to provide a physical distortion that offsets the optical distortion. Support for the features of claim 20 may be found on page 7, lines 23–33 of the application as originally filed. In this paragraph on page 7, it is stated that the photosensors vary dimensionally in order to define an array that is curvilinear. The curvilinear array is dimensioned to compensate for the curvilinear distortion introduced by the lens system.

The patent to Durbin et al. does not teach or suggest an array in which photosensors are varied dimensionally. Moreover, the patent does not teach or suggest an array having a curvilinear shape. The photosensor array of Durbin et al. has a rectangular shape, so that it is not aligned relative to

curvilinear distortion so as to introduce a physical distortion that offsets the curvilinear distortion. Therefore, the newly added independent claim 20 is asserted as being patentable over the prior art.

Claims 21 and 22 track the claim language of claims 18 and 19 as originally filed. The dependent claims describe the photosensor array in greater detail. The photosensors are disposed in columns and rows, with adjacent columns being spaced apart by an arcuate boundary. The radii of curvature of the arcuate boundaries increase with departure from the optical axis of the array. Claim 22 describes the adjacent rows as being spaced apart by arcuate boundaries that increase in radii of curvature with departure from the optical axis. The embodiment described in claims 21 and 22 is shown in Fig. 10 of the application as originally filed. The embodiment of Fig. 10 is neither taught nor suggested by the reference to Durbin et al., which describes a rectangular photosensor array. The conventional rectangular shape described in Durbin et al. is illustrated in Fig. 9 of the application as originally filed. Nothing within the prior art patent teaches or suggests modifying the array of Fig. 9 to provide an array of the type shown in Fig. 10. Consequently, the Durbin et al. patent does not render the invention of claims 21 and 22 obvious. It is respectfully asserted that the added claims are in an allowable condition.

B. Prima Facie Case of Obviousness

Section 2142 of the MPEP sets forth the criteria which must be met in order for an Examiner to meet the burden of establishing a *prima facie* case of obviousness. It is stated that to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the cited references or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all of the claim limitations.

With regard to claim 17, the array of photosensors is described as having arcuate edges to establish compensation for curvilinear distortion introduced by the lens system. The Office action accurately points to column 15, lines 4–13, of Durbin et al. for teaching that the prior art photosensor array is described as having a rectangular shape. Therefore, the prior art reference does not teach or suggest all of the claim limitations, so that the third criterion is not met. Moreover, the Office action does not identify any suggestion or

motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the Durbin et al. teachings. Instead, it is stated that achieving compensation is an inherent feature for photosensor arrays having a lens system. The Durbin et al. patent describes a number of techniques for achieving the compensation. However, none of the techniques includes providing an array having arcuate edges to achieve compensation for curvilinear distortion. In column 18 of the patent, it is stated that correction may occur at the optics, the reader, or the electronic processing. The optical correction occurs if the magnification is tailored. Alternatively, the reader (12) may be increased in resolution (number of pixels per row and column) to modify the apparent height-to-width ratio of the generated image to more closely correspond to the height-to-width ratio of the labels being read. As another alternative, the sensor may be oriented obliquely, such that the plane of the sensor substantially coincides with the plane of the generated image. As previously noted, Applicant does not claim to have invented compensation for curvilinear distortion. Rather, Applicant's claims are directed to the invention described with reference to Fig. 10 of the specification as originally filed. By teaching that the photosensor array is rectangular in shape, the prior art reference teaches away from the claimed invention. Therefore, Durbin et al. does not present a *prima facie* case of obviousness.

Claims 18 and 19 more specifically describe the photosensor array of Fig. 10. The photosensors are arranged in columns and rows, with adjacent columns being spaced apart by an arcuate boundary (claim 18) and adjacent rows being spaced apart by second arcuate boundaries (claim 19). The radii of curvature of the first and second arcuate boundaries increase with departure from the optical axis of the array.

In addressing the patentability of claims 18 and 19, the Office action evidences that the claims were inaccurately interpreted. It is stated that the photosensor columns of Durbin et al. are spaced apart by an arcuate boundary with radii increasing with departure of curvature. Applicant respectfully notes that this is inconsistent with the claim language, wherein the various arcuate boundaries are described as increasing in radii of curvature with departure from an optical axis. In a correct interpretation of the pending claims, the issue under Section 103(a) is whether the rectangular array of Fig. 9 of the pending application teaches or suggests the physically distorted array of Fig. 10. Fig. 9 of the pending application does not include column boundaries or row boundaries that increase in radii of curvature with departure from the optical axis of the array. Since Fig. 9 of the pending


application is consistent with the description of the Durbin et al. photosensor array and since the arrays of Fig. 9 and Durbin et al. are inconsistent with the description of claims 18 and 19, it is respectfully submitted that the Office action does not present a *prima facie* case of obviousness. Therefore, the pending claims are believed to be in an allowable condition.

In accordance with the November 7, 2000 changes to 37 C.F.R. 1.121, a clean set of claims is attached, consolidating all claims currently pending in the application.

Applicant respectfully requests reconsideration of the claims in view of the amendments and remarks made herein. A notice of allowance is earnestly solicited. In the case that any issues regarding this application can be resolved expeditiously via a telephone conversation, Applicant invites the Examiner to call Terry McHugh at (650) 969-8458.

Respectfully submitted,
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By


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REPLACEMENT CLAIMS FOLLOWING AMENDMENT

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- 1 17. An arrangement of a sensor and optics comprising:
2 an array of photosensors; and
3 a lens system for providing a focus for imaging by said array, said
4 lens system having a characteristic of introducing curvilinear distortion of an
5 image to said array;
6 said array having a shape to achieve compensation of said
7 curvilinear distortion, including having arcuate edges to establish said
8 compensation.

- 1 18. The arrangement of claim 17 wherein said photosensors are disposed in a
2 plurality of columns and a plurality of rows and wherein said photosensors
3 combine to define an optical axis for said array, adjacent columns being spaced
4 apart by an arcuate boundary, with radii of curvature of said arcuate boundaries
5 increasing with departure from said optical axis.

- 1 19. The arrangement of claim 18 wherein adjacent rows are spaced apart by
2 second arcuate boundaries, with radii of curvature of said second arcuate
3 boundaries increasing with departure from said optical axis.

1 20. An arrangement of a sensor and optics comprising:
2 a two-dimensional array of photosensors; and
3 a lens system for providing a focus for imaging by said array, said
4 lens system having a characteristic of optically introducing curvilinear distortion
5 of an image to said array;
6 said array having a curvilinear shape to achieve compensation of
7 said curvilinear distortion, including having a plurality of arcuate outer edges to
8 establish said compensation, said photosensors being varied dimensionally to
9 define said curvilinear shape, said curvilinear shape being aligned relative to said
10 curvilinear distortion to introduce a physical distortion that offsets said optically
11 introduced curvilinear distortion.

1 21. The arrangement of claim 20 wherein said photosensors are disposed in a
2 plurality of columns and a plurality of rows and wherein said photosensors
3 combine to define an optical axis for said array, adjacent columns being spaced
4 apart by an arcuate boundary, with radii of curvature of said arcuate boundaries
5 increasing with departure from said optical axis.

1 22. The arrangement of claim 21 wherein adjacent rows are spaced apart by
2 second arcuate boundaries, with radii of curvature of said second arcuate
3 boundaries increasing with departure from said optical axis.